

**REMARKS**

Claims 1-16, 24, and 26-28 remain pending in this application. Claims 1-16, 24, and 26-28 are rejected. Claims 11 and 24 are amended herein to place them in better form.

Claim 1 has been rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,094,926 (Kobayashi et al.) in view of EP 1094030 (Maruko) as evidenced by U.S. Patent No. 6,165,633 (Negishi).

To establish a *prima facie* case of obviousness, it is necessary to show that all the claim limitations are taught or suggested by the prior art. *See In re Royka and Martin*, 180 USPQ 580, 583, 490 F.2d 981 (CCPA 1974). Claim 1 recites a steam generator comprising a combustion section. The Office Action has not identified where such steam generator is present in Kobayashi et al. Although the Office Action cites to evaporator 38 comprising a combustion chamber 30, combustion chamber 30 is part of the reformer and is not part of the evaporator 38.

Claim 1 recites characteristics of the reformer of the present invention. The Office Action states that Kobayashi et al. does not specify the exact design of the reformer and relies on Maruko for the teaching of a reformer to be used in the invention of Kobayashi et al. However, the evaporator 38 of Kobayashi et al. utilizes a combustion exhaust gas from the combustion chamber 30 of the reformer to get heat. If the reformer of Kobayashi et al. is replaced with the reformer of Maruko that there will no longer be a combustion chamber in the reformer to provide heat to the

evaporator. There is no suggestion or motivation to make a proposed modification if the proposed modification would render the prior art being modified unsatisfactory for its intended purpose. *See In re Gordon*, 221 USPQ 1125, 1127 (Fed. Cir. 1984). Accordingly, *prima facie* obviousness has not been demonstrated.

Moreover, in Kobayashi et al. the exhaust gases from the anode chamber and cathode chamber are led to the combustion chamber of the reformer to equalize pressure. If the reformer of Kobayashi et al. is replaced with the reformer of Maruko, that this equalization of pressure would no longer be possible. Thus, Kobayashi et al. teaches away from the combination with Maruko. The Federal Circuit has stated that, as a general rule, references that teach away cannot serve to create a *prima facie* case of obviousness. *See McGinley v. Franklin Sports Inc.*, 60 USPQ2d 1001, 1010 (Fed. Cir. 2001).

Also, the Office Action states that it would be obvious to modify Kobayashi et al. to include the reformer disclosed in Maruko. However, the reformer of Kobayashi et al. is designed to utilize combustion to ensure that the reformation reaction takes place. For example, anode exhaust gases are introduced into the combustion chamber of the reformer in Kobayashi et al. The cathode exhaust gas of Kobayashi et al. is also partially fed to the combustion chamber of the reformer. Additionally, the combustion gas from the combustion chamber of the reformer is separated from water and recirculated to the cathode chamber. By replacing the reformer of Kobayashi et al. with the reformer of Maruko, all of these recycling

and/or re-utilizing of components would not be possible and the Office Action has not provided a reason to make such changes to Kobayashi et al. The design of the reformer in Maruko is inconsistent with the function of the reformer of Kobayashi et al. Moreover, the Office Action has not identified what would happen to all those streams that currently interconnect the reformer and the fuel cell if the reformer of Kobayashi et al. is replaced with the reformer of Maruko. Accordingly, *prima facie* obviousness is absent.

Thus, for at least the aforementioned reasons, claim 1 is patentable over the Kobayashi et al. in view of Maruko and notice to this effect is respectfully requested.

Claims 1-16, 24, and 26-28 have been rejected under 35 U.S.C. § 103(a) as obvious over JP 10-308230 (Tetsuo) in view of Maruko as evidenced by Negishi.

To establish a *prima facie* case of obviousness, it is necessary to show that all the claim limitations are taught or suggested by the prior art. *See In re Royka and Martin*, 180 USPQ 580, 583, 490 F.2d 981 (CCPA 1974). Claim 1 recites characteristics of the reformer of the present invention. The Office Action states that Tetsuo does not specify the exact design of the reformer and relies on Maruko for the teaching of a reformer to be used in the invention of Tetsuo.

Figures 3 and 4 in Tetsuo are not directed to the invention of Tetsuo since those are conventional examples. Accordingly, any reliance on Figures 3 and 4 by the Office Action is not appropriate since that is not what Tetsuo intends to do. There is no reason for one of ordinary skill to modify, in view of Tetsuo, what Tetsuo

has identified as not being the invention of Tetsuo. Moreover, the Office Action has not identified what advantages the conventional examples of Figures 3 and 4 have such that one of ordinary skill in the art would focus on them instead of the invention of Tetsuo.

Also, the invention of Tetsuo is directed to the use of cooling water to cool the reformer. Such water is reheated and sent to the boiler to provide heat to the boiler. If the reformer of Tetsuo is replaced with the reformer of Maruko, such addition of heat to the boiler would be absent and therefore Tetsuo teaches away from using the reformer of Maruko. The Federal Circuit has stated that, as a general rule, references that teach away cannot serve to create a *prima facie* case of obviousness. *See McGinley v. Franklin Sports Inc.*, 60 USPQ2d 1001, 1010 (Fed. Cir. 2001). Thus, *prima facie* obviousness is absent.

Additionally, the Supreme Court has explained the importance of identifying a reason to combine the elements in the way the claimed new invention does. *See KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (U.S. 2007). Insufficient reasoning has been provided by the Office Action. Although the Office Action states that Maruko discloses that the the reformer of Maruko reduces energy cost and the emission of NOx, Maruko does not disclose a comparison of the reformer of Maruko with the reformer of Tetsuo. Accordingly, the statement that the reformer of Maruko is disclosed as being better than that of Tetsuo is not supported

by the Office Action. Accordingly, insufficient showing has been made to motivate one of ordinary skill in the art to replace the reformer of Tetsuo with that of Maruko.

Claim 1 recites a portion of the partition walls as being heat-insulating. The Office Action states that it would be obvious to modify the invention of Tetsuo in view of Maruko in this manner in order to avoid excessive temperatures in the reforming catalyst. However, the Office Action has not demonstrated that there is an overheating problem in Maruko, especially in the reforming catalyst. Accordingly, the position of the Office Action is based on mere speculation without any evidentiary basis. The Office Action states that the structure of the reformer would be damaged if it gets too hot and has not explained how the use of insulation between the reforming catalyst and the mixed catalyst would keep the structure from getting hot. Also, Negishi states that the temperature of the reformer is controlled by the amount of oxygen utilized and therefore there is no reason to use the insulation since the temperature can be controlled by the amount of oxygen utilized.

Also, the Examiner's position is that in Tetsuo in view of Maruko the discharge stream of the reforming zone 51 is hot and that it enters oxidizing zone 52 and that it would therefore be obvious to insulate the portion between sections 52 and 51 of Maruko to protect the reforming catalyst from being overheated. However, the Office Action's reasoning would not motivate one of ordinary skill in the art to include the recited insulating portions. The catalyst mixture in zone 52 includes reforming catalyst and if it got too hot such that the reforming catalyst in 51 would

be damaged, then the reforming catalyst in 52 would also be damaged. Adding insulation to protect zone 52 (which includes a reforming catalyst) to keep the reforming catalyst in zone 51 from overheating would not save the reforming catalyst in 52. Thus, there is no disclosure of overheating of the mixed catalyst in Maruko and the Office Action is inappropriately using hindsight to try piece together the claimed invention without evidentiary support.

Moreover, the reforming reaction is endothermic and the heat from the reaction occurring in 52 would help offset the heat that is being lost in 51. Thus, the Office Action has not provided sufficient reasoning for one of ordinary skill in the art to insulate zone 51 from zone 52. The purpose of combining the oxidizing catalyst and the reforming catalyst is so that the oxidation can provide heat to the reforming. In contrast, the Office Action is suggesting that insulation should be added to keep the heat from the oxidizing in zone 52 from going to the reforming in zone 51. One of ordinary skill in the art would not be motivated to insulate zone 52 from zone 51 to avoid zone 51 from getting too hot and no evidence to the contrary has been provided by the Office Action.

Additionally, as explained in the attached Declaration Under 37 C.F.R. § 1.132, the use of the insulation in the present invention provides significant and unexpected results. Unexpected superiority in a property can rebut *prima facie* obviousness. See *In re Chupp*, 2 USPQ2d 1437, 1439, 816 F.2d 643 (Fed. Cir. 1987). Accordingly, claim 1 is patentable over the cited art and notice to that effect

is respectfully requested. Claims 2-16, 24, and 26-28 are patentable at least for the reason that they depend from a patentable base claim. *See In re Fine*, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988).

Regarding claim 4, the Office Action has not demonstrated that the flue gases 5 or 9 are heating any steam/water.

Regarding claims 5 and 6, the Office Action is inappropriately relying on Fig. 3 of Tetsuo, which is not the invention of Tetsuo since it is directed to a conventional example. No reason has been provided to modify Tetsuo with the characteristics of a conventional example.

Regarding claim 8, the excess steam recited in claim 8 is from the steam generator and the Office Action has not explained how any excess steam from the boiler is being used to heat tank 47.

The Examiner did not explain why claims 12, 13, and 14 have been rejected. Accordingly, it is Applicants' position that *prima facie* obviousness has not been demonstrated.

Claim 16 recites further comprising a heat exchanger and the Office Action did not address such limitation. Accordingly, it is Applicants' position that *prima facie* obviousness has not been demonstrated.

Regarding claims 24, 27, and 28, the Office Action has not explained where they are disclosed or suggested in the cited art. Accordingly, it is Applicants' position that *prima facie* obviousness has not been demonstrated.

Claims 11 and 24 were amended to be in better form. Support for the claim amendments can be found in, for example, the claims as filed.

Applicants respectfully request a three month extension of time for responding to the Office Action. The fee for the three month extension has been provided with the Request for Continued Examination which this Amendment accompanies.

The USPTO is hereby authorized to charge any fee(s) or fee(s) deficiency or credit any excess payment to Deposit Account No. 10-1250.

In light of the foregoing, the application is now believed to be in proper form for allowance of all claims and notice to that effect is earnestly solicited.

Respectfully submitted,  
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enc: Declaration Under 37 C.F.R. § 1.132